

Remarks

Further and favorable reconsideration is respectfully requested in view of the foregoing amendment and following remarks.

Thus, claim 1 has been amended to recite that the porous hollow fiber has a porosity of 65-80%, based on the disclosure page 17, line 22 of the specification.

Applicants respectfully submit that this amendment should be entered, even though it is presented after a Final Rejection, since it reflects the porosity of the hollow fiber of the present invention as set forth in the Rule 132 Declaration filed July 9, 2008, which has already been considered by the Examiner.

Substance of Interview

On October 15, 2008, Applicants' attorney left a voicemail message for Examiner Fortuna. Referring to item 2 on page 2 and item 4 on page 3 of the Office Action, Applicants' attorney asked the Examiner if she was maintaining the prior art rejections in the earlier Office Action of December 11, 2007. On October 22, 2008, the Examiner confirmed that she is maintaining all of the rejections in items 5, 6, 8 and 9 of the earlier Office Action. [However, it seems to Applicants' attorney that the rejections in items 8 and 9 have already been rendered moot, for the reasons set forth in the paragraph bridging pages 6 and 7, and the first full paragraph on page 7, of the Amendment filed June 11, 2008, i.e., the rejections in items 8 and 9 were rendered moot on their face in view of the earlier claim amendments; and therefore, it is the understanding of Applicants' attorney that it is only necessary to respond to the rejection in item 6 of the earlier Office Action, and the new rejection, based on EP 1 063 256 in item 3 of the current Office Action of September 30, 2008.]

Discussion of Rejections

Thus, the rejection of claims 1-7 under 35 USC 102(b) or 35 USC 103(a) based on Takamura et al. (US '773) in the earlier Office Action, as well as the rejection of claims 1-4 and 6-7 under 35 USC 103(a) as being unpatentable over EP 1 063 256, are respectfully traversed.

In connection with this rejection, in the Response to Arguments section beginning on page 3 of the current Office Action, the Examiner states that the Takamura et al. reference discusses "the effect in mixing vinylidene fluoride resin of different molecular weight". Applicants respectfully submit that the Examiner's statement in this regard is incorrect.

Thus, in several portions of the reference, Takamura et al. refer to a blend of components, but this blend is a blend of starting materials comprising 35-50 wt.% of polyvinylidene fluoride, 30-45 wt.% of organic liquid and 20-30 wt.% of inorganic particulate material (e.g., at column 5, lines 24-27, column 3, line 54, column 6, line 8, etc.) This is quite different from the blend of two vinylidene fluoride resins, i.e., a smaller proportion of a first vinylidene fluoride resin of an ultra-high molecular weight (Mw1) and a larger proportion of a second vinylidene fluoride resin of a medium-to-high molecular weight (Mw2), recited in claim 1 of the present application.

Still less suggested by Takamura et al. is the effect of the polymer blend in facilitating the stretching utilized in the present invention. This effect will be explained later below by referring to Mr. Tada's previous Rule 132 Declaration, in response to the Examiner's suggestion at page 4, lines 2-6 of the Office Action.

Newly cited EP '256 refers to the possibility of using a mixture of two or more vinylidene homopolymers or copolymers having different weight average molecular weights, at the end of paragraph [0046]. However, EP '256 uses only a single vinylidene fluoride polymer in each of the Examples, and fails to disclose a specific example of polymer blends having different molecular weights. Moreover, EP '256 completely fails to suggest the above-mentioned specific blend of two polymers used in the present invention, or the stretch-facilitating effect thereof.

Now, the stretch-facilitating effect of the blend of polymers having different molecular weights will be explained with reference to Table A of the previously submitted Declaration by Mr. Tada, reporting the performance of a polymer blend (Example 7) and a single polymer (Comparative Example A). The first clear observed difference is in Elongation at break, shown in the last row in Table A, of the hollow fibers before stretching, i.e. between Example 7 (Unstretched) and Comparative Example A (Unstretched) showing elongations of 141 % and 51.2 %, respectively. Thus, the polymer blend of the present invention provides a hollow fiber before stretching showing a much larger elongation, which leads to a remarkably better stretchability, as clearly shown by Example 7 having a stretch ratio of 1.7 times, whereas the hollow fiber of the single polymer (Comparative Example A) was severed at a low stretch ratio of 1.35 times, and gives a stretched hollow fiber only at an even lower stretch ratio of 1.30 times. As a result, the stretched hollow fiber of Example 7 stably provided a larger average pore size P of 0.131 μm and a larger porosity of 75.9 %, compared with 0.095 μm and 57.9 % of Comparative Example A (x 1.30 stretch). These differences result in a larger water permeability

F_0 of 72.2 ($\text{m}^3/\text{m}^2 \cdot \text{day}$, 100kPa at 25°C) for the hollow fiber of Example 7, compared with 50.1 ($\text{m}^3/\text{m}^2 \cdot \text{day}$, 100kPa at 25°C) for the hollow fiber of Comparative Example A (x 1.30 stretch).

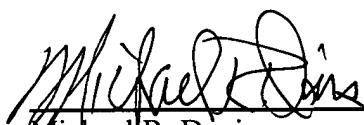
Such a remarkable improvement in stretchability and the resultant improvement in performance of the stretched hollow fiber by use of a polymer blend instead of a single polymer realized by the present invention, could not have been reasonably predicted from either the Takamura et al. or EP '256 reference.

For these reasons, Applicants take the position that the presently claimed invention is clearly patentable over the applied references.

Therefore, in view of the foregoing remarks, it is submitted that each of the grounds of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

Respectfully submitted,

Yasuhiro TADA et al.

By: 
Michael R. Davis
Registration No. 25,134
Attorney for Applicants

MRD/akl
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
December 30, 2008